

Mr. Philip McKittrick
Polyfoam Packers Corporation
955 Woodland Avenue
Michigan City, IN 46360

Re: 091-14438-00079
Significant Source Modification to:
Part 70 permit No.: T091-7666-00079

Dear Mr. McKittrick:

Polyfoam Packers Corporation was issued a Part 70 operating permit T091-7666-00079 on October 14, 1999 for operation of a polystyrene shape molding operation. An application to modify the source was received on May 23, 2001. Pursuant to 326 IAC 2-7-10.5 the following emission units are approved for construction at the source:

- (a) One (1) molding press, model number 813, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-29;
- (b) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-30;
- (c) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-31;
- (d) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-32;
- (e) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-33; and
- (f) One (1) molding press, model number EHV-C, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-34.

The following construction conditions are applicable to the proposed project:

- 1. General Construction Conditions
The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Quality (OAQ).

2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.
3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.
4. Pursuant to 326 IAC 2-1.1-9 and 326 IAC 2-7-10.5(i), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.
5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.
6. Pursuant to 326 IAC 2-7-10.5(l) the emission units constructed under this approval shall not be placed into operation prior to revision of the source's Part 70 Operating Permit to incorporate the required operation conditions.

This significant source modification authorizes construction of the new emission units. Operating conditions shall be incorporated into the Part 70 operating permit as a significant permit modification in accordance with 326 IAC 2-7-10.5(l)(2) and 326 IAC 2-7-12. Operation is not approved until the significant permit modification has been issued.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter call Nishat Hydari at (973) 575-2555, ext. 3216, or call (800) 451-6027, press 0 and ask for extension 3-6878.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

Attachments
NH/EVP

cc: File - LaPorte County
LaPorte County Health Department
Northwest Regional Office
Air Compliance Section Inspector - Rick Massoels
Compliance Data Section - Karen Nowak
Administrative and Development - Cynthia Bymaster
Technical Support and Modeling - Michele Boner

SECTION A

SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates stationary polystyrene shape molding operations.

Responsible Official: Phil McKittrick
Source Address: 955 Woodland Avenue, Michigan City, Indiana 46360
Mailing Address: 955 Woodland Avenue, Michigan City, Indiana 46360
SIC Code: 3086
County Location: LaPorte
County Status: Attainment for all criteria pollutants
Source Status: Part 70 Permit Program
Minor Source, under PSD

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

- 1) One (1) boiler, model number CB 700-250, fueled by natural gas, heat input rate is 10.5 MMBtu per hour and exhausting to stack S-1.
- 2) Thirty-one (31) foam polystyrene storage silos with a total maximum storage capacity of 76,000 pounds.
- 3) One (1) polystyrene pre expander, model number 6000, rated at 1500 pounds per hour and exhausting to stack S-4.
- 4) One (1) molding press, model number 812, rated at 300 pounds per hour, and exhausting to stack S-11.
- 5) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-14.
- 6) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-15.
- 7) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-16.
- 8) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-17.
- 9) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-18.

- 10) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-19.
- 11) One (1) pre expander, rated at 500 pounds per hour and exhausting to stack S-5.
- 12) One (1) # 2 pre expander, rated at 1500 pounds per hour, exhausting to stack S-6.
- 13) Two (2) molding presses, each rated at 150 pounds per hour, one exhausting to stack S-7 and the other press exhausting to stack S-8.
- 14) One (1) molding press, model number 812, rated at 300 pounds per hour, and exhausting to stack S-12.
- 15) One (1) molding presses, model number 812, rated at 300 pounds per hour and exhausting to stack S-13.
- 16) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-20.
- 17) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-21.
- 18) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-22.
- 19) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-23.
- 20) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-24.
- 21) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-25.
- 22) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-26.
- 23) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-27.
- 24) One (1) molding press, Kohler model 609, rated at 400 pounds per hour and exhausting to Stack S-10.
- 25) One (1) molding press, model number 1317, identified as P001, rated at 600 pounds per hour, and exhausting to stack S-28.
- 26) One (1) molding press, model number 813, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-29.
- 27) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-30.

- 28) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-31.
- 29) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-32.
- 30) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-33.
- 31) One (1) molding press, model number EHV-C, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-34.

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)]
[326 IAC 2-7-5(15)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

- 1) One (1) boiler, model number CB 700-200, fueled by natural gas, heat input rate is 8.4 MMBtu per hour and exhausting to stack S

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

- (a) It is a major source, as defined in 326 IAC 2-7-1(22).
- (b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

SECTION D.2

FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

Thirty-one (31) foam polystyrene storage silo with a maximum storage silo with a maximum storage capacity of 76,000 pounds.

One (1) polystyrene pre expander, model number 6000, rated at 1500 pounds per hour and exhausting to stack S-4.

One (1) molding press, model number 812, rated at 300 pounds per hour, and exhausting to stack S-11.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-14.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-15.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-16.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-17.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-18.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-19.

One (1) pre expander, rated at 500 pounds per hour, exhausting to stack S-5.

One (1) # 2 pre expander, rated at 1500 pounds per hour, exhausting to stack S-6.

Two (2) molding presses, each rated at 150 pounds per hour, one exhausting to stack S-7 and the other press exhausting to stack S-8.

One (1) molding press, model number 812, rated at 300 pounds per hour, and exhausting to stack S-12.

One (1) molding presses, model number 812, rated at 300 pounds per hour and exhausting to stack S-13.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-20.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-21.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-22.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-23.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-24.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-25.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-26.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-27.

One (1) molding press, Kohler model 609, rated at 400 pounds per hour, and exhausting to Stack S-10.

One (1) molding press, model number 1317, identified as P001, rated at 600 pounds per hour, and exhausting to stack S-28.

One (1) molding press, model number 813, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-29.

One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-30.

One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-31.

One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-32.

One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-33.

One (1) molding press, model number EHV-C, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-34.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.2.1 Prevention of Significant Deterioration [326 IAC 2-2 and 40 CFR 52.21]

Pursuant to CP 091-4823-00079, issued on March 29, 1996, the molding process shall use no more than 26.77 tons per month of pentane (VOC) (at 77.5% flash off). This usage limit is required to limit the potential to emit of VOC to 20.75 tons per month. Compliance with this limit makes the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21 not applicable.

D.2.2 New Facilities, General Reduction Requirements [326 IAC 8-1-6]

Pursuant to CP 091-4823-00079, issued on March 29, 1996, the best available control technology (BACT) for the expandable polystyrene molding process shall be the use of the lowest available pentane content material without add-on control equipment. Also, the Permittee shall continuously search for material with lower pentane and VOC content. The applicant shall submit an annual report within 30 days of January 1 describing the search conducted during the past twelve (12) months, results of the previous year's search, and schedule of switching to material with lower pentane and VOC content if the material is available. Compliance with this condition will fulfill the requests of 326 IAC 8-1-6.

D.2.3 New Facilities, General Reduction Requirements [326 IAC 8-1-6]

BACT - The OAM, IDEM has determined the BACT for the pre expander, rated at 500 pounds per hour and # 2 pre expander, rated at 1500 pounds per hour shall be as follows:

- (a) The molding compound shall contain a maximum average of 5.5% pentane.
- (b) Polyfoam will continue to work with resin suppliers to seek to obtain resins with lower VOC content. Polyfoam will also continue to evaluate the alternate materials.
- (c) The Permittee shall continuously search for material with lower pentane and VOC content. The applicant shall submit an annual report within 30 days of January 1 describing the search conducted during the past twelve (12) months, results of the previous year's search, and schedule of switching to material with lower pentane and VOC content if the material is available. Compliance with this condition will fulfill the requests of 326 IAC 8-1-6.

D.2.4 New Facilities, General Reduction Requirements [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6 (New Facilities, General Reduction Requirements), the Best Available Control Technology (BACT) for the six (6) molding presses, shall be the following:

- (a) The VOC usage for the six (6) molding presses, shall be limited to 155.22 tons per twelve (12) consecutive month period.
- (b) The molding compound shall contain a maximum average of 5.5% pentane.
- (c) The Permittee shall continuously search for material with lower pentane and VOC content. The applicant shall submit an annual report within 30 days of January 1 describing the search conducted during the past twelve (12) months, results of the previous year's search, and schedule of switching to material with lower pentane and VOC content if the material is available. Compliance with this condition will fulfill the requests of 326 IAC 8-1-6.

D.2.5 Volatile Organic Compounds (VOC) [326 IAC 2-7-10.5] [326 IAC 8-1-6]

Any change or modification that will cause VOC emissions from the molding press identified as P001, to be equal to or greater than 25 tons per year shall require IDEM, OAM approval before such changes can take place.

Compliance Determination Requirements

D.2.6 Testing Requirements [326 IAC 2-7-6(1)]

The Permittee is not required to test this facility by this permit. However, IDEM may require compliance testing at any specific time when necessary to determine if the facility is in compliance. If testing is required by IDEM, compliance with the VOC limit specified in Condition D.2.1 and D.2.2 shall be determined by a performance test conducted in accordance with Section C - Performance Testing.

Record Keeping and Reporting Requirement [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.2.7 Record Keeping Requirements

- (a) To document compliance with Conditions D.2.1 and D.2.5, the Permittee shall maintain records in accordance with (1) through (4) below. Records maintained for (1) through (4) shall be taken monthly and shall be complete and sufficient to establish compliance with the VOC usage limits and/or the VOC emission limits established in Conditions D.2.1 and D.2.5.
- (1) The amount and VOC content of expandable polystyrene molding compound. Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used;
 - (2) A log of the dates of use;
 - (3) The total VOC usage for each month; and
 - (4) The weight of VOCs emitted for each compliance period.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.
- (c) To document compliance with Condition D.2.3, the Permittee shall maintain records of the average monthly pentane content which shall be less than 5.5%.

D.2.8 Reporting Requirements

- a) A quarterly summary of the information to document compliance with Condition D.2.1 and D.2.4 shall be submitted to the addresses listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.
- b) To document compliance with Condition D.2.2, D.2.3 and D.2.4 the Permittee shall submit an annual report within 30 days of January 1 describing the search conducted during the past twelve (12) months, results of the previous years search, and schedule of switching material with lower pentane and VOC content if the material is available.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION**

Part 70 Quarterly Report

Source Name: Polyfoam Packers Corporation
Source Address: 955 Woodland Avenue, Michigan City, IN 46360
Mailing Address: 955 Woodland Avenue, Michigan City, IN 46360
Part 70 Permit No.: T091-7666-00079
Facility: six (6) molding presses
Parameter: VOC
Limit: VOC emissions not to exceed 155.22 tons per twelve (12) consecutive month period rolled on a monthly basis

YEAR: _____

Month	Column 1	Column 2	Column 1 + Column 2
	VOC Usage This Month	VOC Usage Previous 11 Months	VOC Usage 12 Month Total
Month 1			
Month 2			
Month 3			

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.

Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Significant Source Modification and Significant Permit Modification to a Part 70 Operating Permit

Source Background and Description

Source Name:	Polyfoam Packers Corporation
Source Location:	955 Woodland Avenue, Michigan City, IN 46360
County:	LaPorte
SIC Code:	3086
Operation Permit No.:	T091-7666-00079
Operation Permit Issuance Date:	October 14, 1999
Significant Source Modification No.:	091-14438-00079
Significant Permit Modification No.:	091-14496-00079
Permit Reviewer:	NH/EVP

The Office of Air Quality (OAQ) has reviewed a modification application from Polyfoam Packers Corporation relating to the operation of a polystyrene shape molding operation.

History

On May 23, 2001, Polyfoam Packers Corporation submitted an application to the OAQ requesting to add additional presses to their existing plant. Polyfoam Packers Corporation was issued a Part 70 permit on October 14, 1999.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

New Emission Units and Pollution Control Equipment

The application includes information relating to the approval for the construction and operation of the following equipment:

- (a) One (1) molding press, model number 813, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-29;
- (b) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-30;
- (c) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-31;
- (d) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-32;

- (e) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-33; and
- (f) One (1) molding press, model number EHV-C, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-34.

Existing Approvals

The source was issued a Part 70 Operating Permit T091-7666-00079 on October 14, 1999. The source has since received the following:

- (a) First Administrative Amendment No.: 091-11627-00079, issued on January 18, 2000;
- (b) First Minor Source Modification No.: 091-12933-00079, issued on January 4, 2001; and
- (c) Second Administrative Amendment No.: 091-13602-00079, issued on January 17, 2001.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
S-29	Molding press	26	6"	Unknown	155
S-30	Molding press	26	6"	Unknown	155
S-31	Molding press	26	6"	Unknown	155
S-32	Molding press	26	6"	Unknown	155
S-33	Molding press	26	6"	Unknown	155
S-34	Molding press	26	6"	Unknown	155

Recommendation

The staff recommends to the Commissioner that the Significant Source Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on May 23, 2001, with additional information received on July 30, 2001.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (Appendix A, pages 1 through 7).

Potential To Emit Before Controls (Modification)

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA."

Pollutant	Potential To Emit (tons/year)
PM	0.00
PM-10	0.00
SO ₂	0.00
VOC	155.22
CO	0.00
NO _x	0.00

Justification for Modification

The Part 70 Operating permit is being modified through a Part 70 Significant Source Modification. This modification is being performed pursuant to 326 IAC 2-7-10.5(f)(4)(D) because the source has the potential to emit VOC greater than 25 tons per year. This source modification will give the source approval to construct the new emission units.

This Part 70 Operating permit is also being modified through a Part 70 Significant Permit Modification. This modification is being performed pursuant to 326 IAC 2-7-12(d)(1) which states the following:

“Significant modification procedures shall be used for application requesting Part 70 permit modifications that do not qualify as minor permit modifications or as administrative amendments. Every significant change in existing monitoring Part 70 permit terms or conditions and every relaxation of reporting or record keeping permit terms or conditions shall be considered significant”.

County Attainment Status

The source is located in LaPorte County.

Pollutant	Status
PM-10	attainment
SO ₂	attainment
NO ₂	attainment
Ozone	attainment
CO	attainment
Lead	attainment

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. LaPorte County has been designated as attainment or unclassifiable for ozone.

Source Status

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	less than 100
PM-10	less than 100
SO ₂	less than 100
VOC	greater than 100 less than 250
CO	less than 100
NO _x	less than 100

- This existing source is not a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not one of the 28 listed source categories.
- These emissions are based upon the Title V (T091-7666-00079) issued to the source on October 14, 1999.

Potential to Emit After Controls for the Modification

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units for the modification.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
Existing Title V source	45.99	--	--	249	--	--	--
Modification (six (6) molding presses)	--	--	--	see note below*	--	--	--
Total Emissions	45.99	--	--	< 250	--	--	--

*The source has agreed to maintain the VOC limit of less than 249 tons per year even with the addition of the six (6) new molding press to their existing operation. Thus, the source will still maintain its PSD minor source status.

This modification to an existing minor stationary source is not major because the emission increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2 and 40 CFR 52.21, the PSD requirements do not apply.

Federal Rule Applicability

- There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this source.
- There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

There are no HAPs emitted from this modification. Therefore, 326 IAC 2-4.1 does not apply.

326 IAC 2-6 (Emission Reporting)

This source is subject to 326 IAC 2-6 (Emission Reporting), because it has the potential to emit more than one hundred (100) tons per year of VOC. Pursuant to this rule, the owner/operator of the source must annually submit an emission statement for the source. The annual statement must be received by July 1 of each year and contain the minimum requirement as specified in 326 IAC 2-6-4. The submittal should cover the period defined in 326 IAC 2-6-2(8)(Emission Statement Operating Year).

326 IAC 5-1 (Visible Emissions Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Individual Facilities

326 IAC 8-1-6 (New Facilities, General Reduction Requirements)

Pursuant to 326 IAC 8-1-6, new facilities located anywhere in the state that were constructed on or after January 1, 1980, which have a potential to emit (PTE) VOC at 25 tons or more per year, and which are not otherwise regulated by another provision of Article 8, are subject to the rule requirements.

The six (6) molding presses are subject to the requirements of 326 IAC 8-1-6 because the VOC emissions from the six (6) molding presses are greater than 25 tons per year.

Options Considered

- 1) Recuperative Thermal Incineration
- 2) Regenerative Thermal Incineration
- 3) Recuperative Catalytic Incineration
- 4) Regenerative Catalytic Incineration
- 5) Flare
- 6) Carbon Adsorption
- 7) Absorption
- 8) Condensation
- 9) Carbon Adsorption - Oxidation

Technically Infeasible Options

- 5) Flare

Flares are open flames used to combust emissions streams resulting from normal or upset process conditions. Flares are typically applied when the heat content of the emission stream is greater than 300 Btu/scf and when the value of any recovered product is negligible. Properly employed, the efficiency of a flare can be 98% or better.

The emission stream enters the flare stack where pilot burners ignite the VOCs. The emission stream destruction efficiency achieved with flaring depends on factors such as flare gas exit velocity, emission stream heating value, residence time in the combustion zone, emissions stream/oxygen mixing and flame temperature.

If mixing of the emission stream is desirable, steam or compressed air is sometimes introduced to cause turbulence. If the heating value of the emission stream is not high enough to sustain a high enough temperature, supplementary fuel (usually natural gas) is necessary.

Because the heat content of the building fugitive air stream is so low, this control option was not considered further in the BACT analysis.

7) Absorption

Absorption is a unit operation where components of a gas phase mixture (pollutants) are selectively transferred to a relatively nonvolatile liquid, usually water. Sometimes, organic liquids, such as mineral oil or non-volatile hydrocarbons, are suitable absorption solvents. The choice of solvent depends on cost and the solubility of the pollutant in the solvent.

The liquid initially contains less than an equilibrium concentration of the pollutants. That difference between actual and equilibrium concentrations provides the driving force for mass transfer to the liquid phase. Because the concentration gradient drives the process, absorption is most effective for streams with fairly high pollutant concentrations. For example, absorbers can reach removal efficiencies of 98% for inlet concentrations on the order of 5,000 ppmv. Absorption can also be very effective for dilute streams if the pollutant is highly soluble in the chosen solvent.

There are several types of gas-liquid contacting devices, such as packed beds, plate or tray towers, and venturi scrubbers. Packed bed absorption columns are the only gas-liquid contacting technique ERM considered in this study. Venture scrubbers are commonly used for particulate removal rather than gas absorption. Plate columns are typically more expensive than packed columns for diameters under 2 ft.

The principal drawback of absorption processes is the volume of liquid waste produced. The waste must either be collected and shipped off site for disposal, or discharged to a wastewater treatment system. Some air pollution control agencies reject absorption control devices on the assumption that pollutants escape to the atmosphere during transfer and treatment in wastewater systems.

Absorption is not a feasible VOC control technology for the Polyfoam's processes because pentane is not soluble in water.

8) Condensation

Condensation is the separation of VOCs from an emission stream through a phase change, by either increasing the system pressure or, more commonly, lowering the system temperature below the dew point of the VOC vapor. When condensers are used for air pollution control, they usually operate at the pressure of the emission stream, and typically require a refrigeration unit to obtain the temperature necessary to condense the VOCs from the emission stream.

The emission stream enters a heat exchanger, usually of shell and tube design, and encounters the cold surface of tubes carrying the heat transfer fluid. The emission stream temperature drops to the dew point of its VOC constituents. The VOC liquefies and drops out of the emission stream. The "cleaned" emission stream is then vented to the stack while the condensed solvent is collected for reuse or disposal.

Condensation systems are recommended for emission streams containing between 5,000 and 10,000 ppm. The number and nature of constituents in the emission stream affects condensation significantly. One very significant limitation is that if the pollutant concentration at the lowest temperature obtainable is less than the equilibrium vapor concentration, then there will be no condensation. As a rule of thumb, condensation is not effective for pollutants with boiling points over 100 F. The relative humidity of the emission stream is an important factor also, because ice formation on heat exchanger tubes interferes with heat transfer.

Condensation is not a technically feasible VOC control technology for Polyfoam because temperatures low enough to condense the very dilute vapors can not be obtained with commercial refrigeration systems.

The technically feasible options are:

- 1) Recuperative Thermal Incineration
- 2) Regenerative Thermal Incineration
- 3) Recuperative Catalytic Incineration
- 4) Regenerative Catalytic Incineration
- 6) Carbon Adsorption
- 9) Carbon Adsorption - Oxidation

A cost analysis was performed to determine the economic feasibility of these four (4) options. The cost analysis is based on potential VOC emissions of 130.6 tons per year.

The tables below show the results of the cost analysis.

Capital Cost

Option	Base Price	Direct Cost	Indirect Cost	Total
Recuperative Thermal Incineration	included in total	included in total	included in total	\$1,128,852
Regenerative Thermal Incineration	included in total	included in total	included in total	\$4,111,112
Recuperative Catalytic Incineration	included in total	included in total	included in total	\$2,623,720
Regenerative Catalytic Incineration	included in total	included in total	included in total	\$3,796,701
Carbon Adsorption	included in total	included in total	included in total	\$1,383,616
Carbon Adsorption - Oxidation	included in total	included in total	included in total	\$5,004,610

Annual Operating, Maintenance & Recovery Cost

Option	Direct Cost	Indirect Cost	Recovery Cost	Total
Recuperative Thermal Incineration	\$3,830,994	\$235,408	included in indirect cost	\$4,066,402
Regenerative Thermal Incineration	\$1,761,549	\$799,143	included in indirect cost	\$2,560,692
Recuperative Catalytic Incineration	\$3,827,394	\$391,257	included in indirect cost	\$4,218,651
Regenerative Catalytic Incineration	\$2,094,971	\$613,819	included in indirect cost	\$2,708,790
Carbon Adsorption	\$3,632,336	\$266,982	included in indirect cost	\$4,376,435
Carbon Adsorption - Oxidation	\$899,842	\$965,082	included in indirect cost	\$1,864,924

Evaluation

Option	Potential Emissions (tons/yr)	Emissions Removed (tons/yr)	Control Efficiency (%)	\$/ton removed
Recuperative Thermal Incineration	155.22	152.12	98%	\$26,732
Regenerative Thermal Incineration	155.22	152.12	98%	\$16,833
Recuperative Catalytic Incineration	155.22	152.12	98%	\$27,732
Regenerative Catalytic Incineration	155.22	152.12	98%	\$17,806
Carbon Adsorption	155.22	147.46	95%	\$29,679
Carbon Adsorption - Oxidation	155.22	152.12	98%	\$12,260

Methodology:

Emissions removed = (potential emissions) * (control efficiency)

\$/ton removed = total annual cost / emissions removed

The cost breakdown is as follows:

1. Annual Cost

a) Direct cost:

- (1) Recuperative thermal incineration and Regenerative thermal incineration - annual fuel cost, annual electricity cost, operating cost and maintenance cost
- (2) Recuperative catalytic incineration and Regenerative thermal incineration - annual fuel cost, annual electricity cost, operating cost, maintenance cost and catalyst replacement cost
- (3) Carbon Adsorption - steam cost, cooling water cost, annual electricity cost, carbon replacement cost, operating cost and maintenance cost
- (4) Carbon Adsorption/Oxidation - natural gas cost, annual electricity cost, operating cost, maintenance cost and replacement parts

b) Indirect cost: overhead, property tax, insurance, administrative and capital recovery (includes recovery credits for Carbon Adsorption)

Determination of BACT

ERM (the consulting firm that conducted the BACT analysis) found several RACT/BACT/LAER determinations for polystyrene foam extrusion plant listed in the USEPA RACT/BACT/LAER Clearinghouse (RBLC) electronic bulletin board service, including one permit issued in Indiana. In addition, ERM has identified two other polystyrene manufacturing facilities with recent permits.

Polystyrene processing plants summarized in RBLC included plants that manufacture a wide range of products. Facilities included in RBLC include the following:

- Styrofoam board insulation - These processes typically produce a thin polystyrene sheet that is rapidly cured. There are several permits where VOC emissions from such facilities are captured and vented to control devices. The Polyfoam facility is different from these operations in that expanded foam is aged over a period of time, resulting in a slow release of VOC emissions that is much more difficult to capture and control.

- Large polystyrene product manufacturing - These facilities have polystyrene manufacturing capacities of several thousand pounds per hour. The Polyfoam facility has a preexpansion capacity of 2,500 pounds per hour, and has much smaller potential VOC emissions than these facilities. Although controls are required for certain larger facilities, because Polyfoam operates a facility with smaller capacity and at smaller throughput rates, the overall control costs on a dollars per ton basis are much higher.
- Low VOC content resins - Certain facilities are contained in the RBLC that are able to utilize low VOC containing resins in their manufacturing operations. Polyfoam has in the past (and is continuing to) worked with its resin supplier to reduce the VOC content of its resins. Although Polyfoam has been successful in reducing the VOC content of its resins to 5.1%, it is unable to reduce the VOC content further at this time due to the type of products it manufactures.
- IDEM permit for Formpac - IDEM recently determined that BACT for a polystyrene plant in Indianapolis, Indiana (Formpac) was controls on reclaim extruders. The Polyfoam plant does not utilize such equipment in its process.

In addition to permits summarized in RBLC, ERM has identified two additional facilities that are involved in the manufacture of polystyrene products. The Utah DEQ issued a permit to Genpak for a foam extrusion plant in Cedar City, Utah. Under Approval Number DAQE-171-95, the Utah DEQ determined that no controls or material substitutions represented BACT for the Genpak facility.

The Pennsylvania Department of Environmental Protection found that substituting carbon dioxide for 15% of the pentane blowing agent was a suitable VOC control technique Formpac Division of Cryovac plant in Reading, Pennsylvania. This technique is not appropriate for the manufacturing process utilized by Polyfoam, however. Polyfoam will continue to investigate the feasibility of VOC substitution with its bead suppliers.

Because material substitution is not appropriate and there is no precedent from other similar sources, the cost effectiveness of each control option is the determining factor for establishing BACT. Regulatory agencies recognize that the cost of add-on pollution controls may be prohibitive. The analysis provided by Polyfoam in this document demonstrates that such controls would be prohibitively expensive for its operation for the six new molding machines.

OAQ has determined that BACT shall be:

- (a) The VOC usage for the six (6) molding presses, shall be limited to 155.22 tons per twelve (12) consecutive month period.
- (b) The molding compound shall contain a maximum average of 5.5% pentane.
- (c) The Permittee shall continuously search for material with lower pentane and VOC content. The applicant shall submit an annual report within 30 days of January 1 describing the search conducted during the past twelve (12) months, results of the previous year's search, and schedule of switching to material with lower pentane and VOC content if the material is available. Compliance with this condition will fulfill the requests of 326 IAC 8-1-6.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

There are no compliance requirements for the equipment covered under this approval.

Changes Proposed

- 1) LaPorte County is attainment for all criteria pollutants. The County Status is Condition A.1 has been revised to reflect this.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates stationary polystyrene shape molding operations.

Responsible Official:	Phil McKittrick
Source Address:	955 Woodland Avenue, Michigan City, Indiana 46360
Mailing Address:	955 Woodland Avenue, Michigan City, Indiana 46360
SIC Code:	3086
County Location:	LaPorte
County Status:	Nonattainment for sulfur dioxide Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Minor Source, under PSD

- 2) The six (6) new molding presses are being added to Section A.2 as follows.

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

- 1) One (1) boiler, model number CB 700-250, fueled by natural gas, heat input rate is 10.5 MMBtu per hour and exhausting to stack S-1.
- 2) Thirty-one (31) foam polystyrene storage silos with a total maximum storage capacity of 76,000 pounds.
- 3) One (1) polystyrene pre expander, model number 6000, rated at 1500 pounds per hour and exhausting to stack S-4.
- 4) One (1) molding press, model number 812, rated at 300 pounds per hour, and exhausting to stack S-11.
- 5) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-14.
- 6) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-15.
- 7) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-16.

- 8) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-17.
- 9) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-18.
- 10) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-19.
- 11) One (1) pre expander, rated at 500 pounds per hour and exhausting to stack S-5.
- 12) One (1) # 2 pre expander, rated at 1500 pounds per hour, exhausting to stack S-6.
- 13) Two (2) molding presses, each rated at 150 pounds per hour, one exhausting to stack S-7 and the other press exhausting to stack S-8.
- 14) One (1) molding press, model number 812, rated at 300 pounds per hour, and exhausting to stack S-12.
- 15) One (1) molding presses, model number 812, rated at 300 pounds per hour and exhausting to stack S-13.
- 16) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-20.
- 17) One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-21.
- 18) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-22.
- 19) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-23.
- 20) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-24.
- 21) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-25.
- 22) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-26.
- 23) One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-27.
- 24) One (1) molding press, Kohler model 609, rated at 400 pounds per hour and exhausting to Stack S-10.
- 25) One (1) molding press, model number 1317, identified as P001, rated at 600 pounds per hour, and exhausting to stack S-28.
- 26) One (1) molding press, model number 813, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-29.**
- 27) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-30.**

- 28) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-31.**
- 29) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-32.**
- 30) One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-33.**
- 31) One (1) molding press, model number EHV-C, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-34.**

- 3) The six (6) new molding presses are being added to the facility description in Section D.2 as follows:

Facility Description [326 IAC 2-7-5(15)]

Thirty-one (31) foam polystyrene storage silo with a maximum storage silo with a maximum storage capacity of 76,000 pounds.

One (1) polystyrene pre expander, model number 6000, rated at 1500 pounds per hour and exhausting to stack S-4.

One (1) molding press, model number 812, rated at 300 pounds per hour, and exhausting to stack S-11.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-14.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-15.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-16.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-17.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-18.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-19.

One (1) pre expander, rated at 500 pounds per hour, exhausting to stack S-5.

One (1) # 2 pre expander, rated at 1500 pounds per hour, exhausting to stack S-6.

Two (2) molding presses, each rated at 150 pounds per hour, one exhausting to stack S-7 and the other press exhausting to stack S-8.

One (1) molding press, model number 812, rated at 300 pounds per hour, and exhausting to stack S-12.

One (1) molding presses, model number 812, rated at 300 pounds per hour and exhausting to stack S-13.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-20.

One (1) molding press, model number 68, rated at 150 pounds per hour, and exhausting to stack S-21.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-22.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-23.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-24.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-25.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-26.

One (1) molding press, model number BR 620, rated at 100 pounds per hour, and exhausting to stack S-27.

One (1) molding press, Kohler model 609, rated at 400 pounds per hour, and exhausting to Stack S-10.

One (1) molding press, model number 1317, identified as P001, rated at 600 pounds per hour, and exhausting to stack S-28.

One (1) molding press, model number 813, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-29.

One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-30.

One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-31.

One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-32.

One (1) molding press, model number 68, identified as P001, rated at 150 pounds per hour, and exhausting to stack S-33.

One (1) molding press, model number EHV-C, identified as P001, rated at 300 pounds per hour, and exhausting to stack S-34.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

- 4) A new condition D.2.4 has been added to the permit to include the BACT requirements for the six (6) new molding presses. The rest of Section D.2 has been re-numbered accordingly.

D.2.4 New Facilities, General Reduction Requirements [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6 (New Facilities, General Reduction Requirements), the Best Available Control Technology (BACT) for the six (6) molding presses, shall be the following:

- (a) The VOC usage for the six (6) molding presses, shall be limited to 155.22 tons per twelve (12) consecutive month period.

- (b) The molding compound shall contain a maximum average of 5.5% pentane.
- (c) The Permittee shall continuously search for material with lower pentane and VOC content. The applicant shall submit an annual report within 30 days of January 1 describing the search conducted during the past twelve (12) months, results of the previous year's search, and schedule of switching to material with lower pentane and VOC content if the material is available. Compliance with this condition will fulfill the requests of 326 IAC 8-1-6.

5) The following revisions have been made to Condition D.2.6 (now re-numbered D.2.7).

D.2.67 Record Keeping Requirements

- (a) To document compliance with Conditions D.2.1 and D.2.4~~5~~, the Permittee shall maintain records in accordance with (1) through (4) below. Records maintained for (1) through (4) shall be taken monthly and shall be complete and sufficient to establish compliance with the VOC usage limits and/or the VOC emission limits established in Conditions D.2.1 and D.2.4~~5~~.
 - (1) The amount and VOC content of expandable polystyrene molding compound. Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used;
 - (2) A log of the dates of use;
 - (3) The total VOC usage for each month; and
 - (4) The weight of VOCs emitted for each compliance period.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.
- (c) To document compliance with Condition D.2.3, the Permittee shall maintain records of the average monthly pentane content which shall be less than 5.5%.

6) The following revisions have been made to Condition D.2.7 (now re-numbered D.2.8).

D.2.78 Reporting Requirements

- a) A quarterly summary of the information to document compliance with Condition D.2.1 **and D.2.4** shall be submitted to the addresses listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.
 - b) To document compliance with Condition D.2.2, **D.2.3** and D.2.3~~4~~ the Permittee shall submit an annual report within 30 days of January 1 describing the search conducted during the past twelve (12) months, results of the previous years search, and schedule of switching material with lower pentane and VOC content if the material is available.
- 7) A reporting form is being added to the permit to show compliance with Condition D.2.4.
- 8) The Title V permit (T091-7666-00079, issued on October 14, 1999) limits the VOC emissions from the source to less than 249 tons per year. The source has agreed to maintain this same limit even with the addition of the six new molding presses.

Conclusion

The construction of this polystyrene shape molding operation shall be subject to the conditions of the attached proposed **Significant Source Modification No. 091-14438-00079**.

Appendix A: Emission Calculations

Company Name: Polyfoam Packers Corp.
Address City IN Zip: 955 Woodland Avenue, Michigan City, IN 46360
Title V SSM: 091-14438
Pit ID: 091-00079
Reviewer: NH/EVP

Uncontrolled Potential Emissions (tons/year)				
Emissions Generating Activity				
Pollutant	Kurtz 813 Press	Kurtz 68 Presses (4)	Erlenbach EHV-C Press	TOTAL
PM	0.00	0.00	0.00	0.00
PM10	0.00	0.00	0.00	0.00
SO2	0.00	0.00	0.00	0.00
NOx	0.00	0.00	0.00	0.00
VOC	38.81	77.60	38.81	155.22
CO	0.00	0.00	0.00	0.00
total HAPs	0.00	0.00	0.00	0.00
worst case single HAP	0.00	0.00	0.00	0.00
Total emissions based on rated capacity at 8,760 hours/year.				
Controlled Potential Emissions (tons/year)				
Emissions Generating Activity				
Pollutant	Kurtz 813 Press	Kurtz 68 Presses (4)	Erlenbach EHV-C Press	TOTAL
PM	0.00	0.00	0.00	0.00
PM10	0.00	0.00	0.00	0.00
SO2	0.00	0.00	0.00	0.00
NOx	0.00	0.00	0.00	0.00
VOC	38.81	77.60	38.81	155.22
CO	0.00	0.00	0.00	0.00
total HAPs	0.00	0.00	0.00	0.00
worst case single HAP	0.00	0.00	0.00	0.00
Total emissions based on rated capacity at 8,760 hours/year, after control.				

Appendix A: Emission Calculations

Company Name: Polyfoam Packers Corp.
Address City IN Zip: 955 Woodland Avenue, Michigan City, IN 46360
Title V SSM: 091-14438
Plt ID: 091-00079
Reviewer: NH/EVP

Emissions from Kurtz 68 Press

material: expandable polystyrene with 5.1% pentane by weight

maximum throughput: 150.0 pounds per hour

$$5.10\% * 300.00 = 7.65 \text{ pounds of pentane per hour}$$

pre-expander	24.00% of pentane released	=	1.84	pounds of pentane per hour released
	0.76 * 7.65	=	5.81	pounds of pentane per hour remaining

storage silos	19.00% of pentane released	=	1.10	pounds of pentane per hour released
	0.81 * 5.81	=	4.71	pounds of pentane per hour remaining

shape mold presses	14.00% of pentane released	=	0.66	pounds of pentane per hour released
	0.86 * 4.71	=	4.05	pounds of pentane per hour remaining

warehouse	20.50% of pentane released	=	0.83	pounds of pentane per hour released
	0.80 * 4.05	=	3.22	pounds of pentane per hour remaining

$$4.43 * \frac{8760}{2000} = 19.40 \text{ tons per year of pentane released by shape mold press}$$

Appendix A: Emission Calculations

Company Name: Polyfoam Packers Corp.
Address City IN Zip: 955 Woodland Avenue, Michigan City, IN 46360
Title V SSM: 091-14438
Plt ID: 091-00079
Reviewer: NH/EVP

Emissions from Kurtz 813 Press

material: expandable polystyrene with 5.1% pentane by weight

maximum throughput: 300.0 pounds per hour

$$5.10\% \quad * \quad 300.00 \quad = \quad 15.30 \quad \text{pounds of pentane per hour}$$

pre-expander	24.00% of pentane released	=	3.67	pounds of pentane per hour released
	0.76 * 15.30	=	11.63	pounds of pentane per hour remaining

storage silos	19.00% of pentane released	=	2.21	pounds of pentane per hour released
	0.81 * 11.63	=	9.42	pounds of pentane per hour remaining

shape mold presses	14.00% of pentane released	=	1.32	pounds of pentane per hour released
	0.86 * 9.42	=	8.10	pounds of pentane per hour remaining

warehouse	20.50% of pentane released	=	1.66	pounds of pentane per hour released
	0.80 * 8.10	=	6.44	pounds of pentane per hour remaining

$$8.86 \quad * \quad \frac{8760}{2000} \quad = \quad 38.81 \quad \text{tons per year of pentane released by shape mold press}$$

Appendix A: Emission Calculations

Company Name: Polyfoam Packers Corp.
Address City IN Zip: 955 Woodland Avenue, Michigan City, IN 46360
Title V SSM: 091-14438
Plt ID: 091-00079
Reviewer: NH/EVP

Emissions from Kurtz 68 Press

material: expandable polystyrene with 5.1% pentane by weight

maximum throughput: 150.0 pounds per hour

$$5.10\% \quad * \quad 300.00 \quad = \quad 7.65 \quad \text{pounds of pentane per hour}$$

pre-expander	24.00%	of pentane released	=	1.84	pounds of pentane per hour released
	0.76	*	7.65	=	5.81 pounds of pentane per hour remaining

storage silos	19.00%	of pentane released	=	1.10	pounds of pentane per hour released
	0.81	*	5.81	=	4.71 pounds of pentane per hour remaining

shape mold presses	14.00%	of pentane released	=	0.66	pounds of pentane per hour released
	0.86	*	4.71	=	4.05 pounds of pentane per hour remaining

warehouse	20.50%	of pentane released	=	0.83	pounds of pentane per hour released
	0.80	*	4.05	=	3.22 pounds of pentane per hour remaining

$$4.43 \quad * \quad \frac{8760}{2000} \quad = \quad 19.40 \quad \text{tons per year of pentane released by shape mold press}$$

Appendix A: Emission Calculations

Company Name: Polyfoam Packers Corp.
Address City IN Zip: 955 Woodland Avenue, Michigan City, IN 46360
Title V SSM: 091-14438
Plt ID: 091-00079
Reviewer: NH/EVP

Emissions from Kurtz 68 Press

material: expandable polystyrene with 5.1% pentane by weight

maximum throughput: 150.0 pounds per hour

$$5.10\% \quad * \quad 300.00 \quad = \quad 7.65 \quad \text{pounds of pentane per hour}$$

pre-expander	24.00% of pentane released	=	1.84	pounds of pentane per hour released
	0.76 * 7.65	=	5.81	pounds of pentane per hour remaining

storage silos	19.00% of pentane released	=	1.10	pounds of pentane per hour released
	0.81 * 5.81	=	4.71	pounds of pentane per hour remaining

shape mold presses	14.00% of pentane released	=	0.66	pounds of pentane per hour released
	0.86 * 4.71	=	4.05	pounds of pentane per hour remaining

warehouse	20.50% of pentane released	=	0.83	pounds of pentane per hour released
	0.80 * 4.05	=	3.22	pounds of pentane per hour remaining

$$4.43 \quad * \quad \frac{8760}{2000} \quad = \quad 19.40 \quad \text{tons per year of pentane released by shape mold press}$$

Appendix A: Emission Calculations

Company Name: Polyfoam Packers Corp.
Address City IN Zip: 955 Woodland Avenue, Michigan City, IN 46360
Title V SSM: 091-14438
Plt ID: 091-00079
Reviewer: NH/EVP

Emissions from Kurtz 68 Press

material: expandable polystyrene with 5.1% pentane by weight

maximum throughput: 150.0 pounds per hour

$$5.10\% \quad * \quad 150.00 \quad = \quad 7.65 \quad \text{pounds of pentane per hour}$$

pre-expander	24.00%	of pentane released	=	1.84	pounds of pentane per hour released
	0.76	*	7.65	=	5.81 pounds of pentane per hour remaining

storage silos	19.00%	of pentane released	=	1.10	pounds of pentane per hour released
	0.81	*	5.81	=	4.71 pounds of pentane per hour remaining

shape mold presses	14.00%	of pentane released	=	0.66	pounds of pentane per hour released
	0.86	*	4.71	=	4.05 pounds of pentane per hour remaining

warehouse	20.50%	of pentane released	=	0.83	pounds of pentane per hour released
	0.80	*	4.05	=	3.22 pounds of pentane per hour remaining

$$4.43 \quad * \quad \frac{8760}{2000} \quad = \quad 19.40 \quad \text{tons per year of pentane released by shape mold press}$$

Appendix A: Emission Calculations

Company Name: Polyfoam Packers Corp.
Address City IN Zip: 955 Woodland Avenue, Michigan City, IN 46360
Title V SSM: 091-14438
Plt ID: 091-00079
Reviewer: NH/EVP

Emissions from Erlenbach EHV-C Press

material: expandable polystyrene with 5.1% pentane by weight

maximum throughput: 300.0 pounds per hour

	5.10%	*	300.00	=	15.30	pounds of pentane per hour
pre-expander	24.00%	of pentane released	=	3.67	pounds of pentane per hour released	
	0.76	*	15.30	=	11.63	pounds of pentane per hour remaining
storage silos	19.00%	of pentane released	=	2.21	pounds of pentane per hour released	
	0.81	*	11.63	=	9.42	pounds of pentane per hour remaining
shape mold presses	14.00%	of pentane released	=	1.32	pounds of pentane per hour released	
	0.86	*	9.42	=	8.10	pounds of pentane per hour remaining
warehouse	20.50%	of pentane released	=	1.66	pounds of pentane per hour released	
	0.80	*	8.10	=	6.44	pounds of pentane per hour remaining
	8.86	*	<u>8760</u>	=	38.81	tons per year of pentane released by shape mold press
			2000			